

*B2*

- d) K397Q;
- e) D425A;
- f) D425N;
- g) D425E;
- h) D425K;
- i) F427A;
- j) K397D + D425K double mutation;
- k) K395D + K397D + D425K + D426K quadruple mutation;
- l) K397D + D425K + F427A triple mutation;
- m) F427A +  $\Delta$ D2L2 double mutation;
- n) K397D + F427A +  $\Delta$ D2L2 triple mutation;
- o) K397D + D425K + F427A +  $\Delta$ D2L2 quadruple mutation;
- p) F427D;
- q) F427K; and
- (r)  $\Delta$ D2L2.

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*Sub C* *B3*

12. (Amended) A mutant B moiety of a pore-forming binary A-B toxin, wherein said mutant B moiety comprises a mutation that inhibits its pore-forming ability, and wherein said mutant B moiety inhibits the pore-forming ability of a naturally-occurring B moiety of said toxin, wherein said mutation is not the deletion of amino acids 302-325 of anthrax protective antigen (SEQ ID NO. 12).

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*Sub C* *P*

19. (Amended) The mutant B moiety of claim 12, having an amino acid sequence that is at least 80% identical to SEQ ID No.: 21 and that has an alteration selected from the group consisting of:

- a) K397D + D425K double mutation;
- b) K395D + K397D + D425K + D426K quadruple mutation;
- c) D425K;
- d) F427A;

- e) K397D + D425K + F427A triple mutation;
- f) F427A +  $\Delta$ D2L2 double mutation;
- g) K397D + F427A +  $\Delta$ D2L2 triple mutation;
- h) K397D + D425K + F427A +  $\Delta$ D2L2 quadruple mutation;
- i) F427D; and
- j) F427K.

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Add the following new claims 28-38.

*CFR 1120*  
28. (New) The B moiety of claim 2, having an amino acid sequence that is at least 80% identical to SEQ ID No.: 21.

*B5*  
29. (New) The mutant B moiety of claim 19, comprising a deletion of amino acids 302-325 of the D2L2 loop.

*30*  
30. (New) The mutant B moiety of claim 1, wherein said mutation is in the PA63 domain of said B moiety if said B moiety is anthrax protective antigen.

*Sub C*  
31. (New) The mutant B moiety of Claim 11, wherein said mutation is in the PA63 domain of said B moiety if said B moiety is anthrax protective antigen.

*32*  
32. (New) A vaccine composition comprising a mutant B moiety of a pore-forming binary A-B toxin or a fragment thereof in a pharmaceutically acceptable carrier, wherein said mutant B moiety comprises a mutation that inhibits its pore-forming ability, and wherein said mutant B moiety inhibits the pore-forming ability of a naturally-occurring B moiety of said toxin.

*33*  
33. (New) The vaccine of claim 6, wherein said mutation is in the PA63 domain of said B moiety-if-said-B-moiety-is-anthrax-protective-antigen.

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